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IS 12733 (1989): Polyamide double braided ropes [TXD 9: Cordage]



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*Indian Standard*

**POLYAMIDE DOUBLE BRAIDED ROPE —  
SPECIFICATION**

भारतीय मानक

पोलीमाइड के दोहरे ब्रेडयुक्त रस्से — विशिष्ट

UDC 677·076·75 : 677·494·675

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 12 September 1989, after the draft finalized by the Cordage Sectional Committee had been approved by the Textile Division Council.

In view of the wide use of polyamide double braided ropes within the country a need was felt to formulate an Indian Standard on this subject.

In the preparation of this standard considerable assistance has been derived from BS 4928 : 1985 'Specification for man-made fibre ropes' issued by the British Standards Institution, UK.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## Indian Standard

# POLYAMIDE DOUBLE BRAIDED ROPE — SPECIFICATION

### 1 SCOPE

**1.1** This standard prescribes requirements of double braided polyamide ropes of 6 mm to 144 mm diameter made from continuous polyamide multifilament yarn.

### 2 REFERENCES

**2.1** The following Indian Standards are necessary adjuncts to this standard.

IS No.	Title
196 : 1966	Atmospheric conditions for testing ( <i>revised</i> )
667 : 1981	Methods for identification of textile fibres ( <i>first revision</i> )
3256 : 1980	Code for inland packaging of ropes and cordages ( <i>first revision</i> )
3871 : 1984	Glossary of terms relating to fibre ropes and cordage ( <i>first revision</i> )
7071 (Part II) : 1974	Methods of physical test for ropes and cordages: Part II Mass, length and linear density
7071 (Part IV) : 1986	Methods of physical test for ropes and cordages: Part IV Breaking load and elongation at break.

### 3 TERMINOLOGY

**3.1** For the purpose of this standard, the definitions as given in IS 3871 : 1984 shall apply.

### 4 ATMOSPHERIC CONDITIONS FOR CONDITIONING AND TESTS

**4.1** The tests shall be carried out under prevailing atmospheric conditions. In all cases of dispute, however, the tests shall be carried out on samples which have been conditioned for 24 hours in a standard atmosphere at  $65 \pm 2$  percent relative humidity and  $27 \pm 2^\circ\text{C}$  temperature (*see* IS 196 : 1966). Where practicable, the tests shall be carried out in the standard conditioning atmosphere. Otherwise, they shall be carried out as quickly as possible not exceeding 15 minutes of removal of the test pieces from the conditioning atmosphere.

### 5 MANUFACTURE AND CONSTRUCTION

#### 5.1 Yarn

The yarn used in the manufacture of rope shall be continuous polyamide multifilament yarn of adequate tenacity to give the desired rope strength.

NOTE — The identification of yarn may be done in accordance with IS 667 : 1981.

#### 5.2 Core and Sheath

**5.2.1** The double braided ropes shall comprise a braided core covered by a braided sheath.

**5.2.2** Half of the strands in both the core and sheath shall have 'S' twist and the other half shall have 'Z' twist.

**5.2.3** With the exception of the requirements of 5.4.2 each strand of the sheath shall be of the same construction and each strand of the core shall also be of the same construction. However, the constructions of sheath and core strands need not be the same.

**5.2.4** The constructional particulars of the rope shall comply with the requirements given in Table 1. Each carrier shall contain two strands.

**Table 1 Constructional Particulars of  
Polyamide Double Braided Rope**

Nominal Diameter	Minimum No. of Carriers for Sheath	Minimum No. of Carriers for Core
mm		
6 to 12	16	8
13 to 24	20	8
25 to 56	24	8
Above 56	32	12

**5.2.5** Each core and sheath shall contain 50 percent of the aggregate mass of material with a permitted deviation of  $\pm 5$  percent.

#### 5.3 Strand

**5.3.1** Yarns of more than one linear density may be used in either the sheath strands or the

core strands or in both in order to produce a strand of suitable size.

## 5.4 Rope

**5.4.1** The braided rope should have uniform tension throughout its length. It should have uniform diameter with round cross section and should be smooth to handle.

**5.4.2** Each rope shall be continuous throughout its length but a core or sheath strand may be lengthened during manufacture by joining on a fresh strand. The minimum longitudinal distance between any two strand splices ( $E$  in mm) shall be given by the equation.

$$E = 31.25 D$$

where  $D$  is the nominal diameter of the rope (in mm).

## 5.5 Coil

**5.5.1** Each coil shall be continuous throughout the length and shall not contain any loose ends splices or joints in the strands or in the rope.

## 6 REQUIREMENTS

**6.1** The double braided polyamide rope shall meet the requirements given in Table 2.

### 6.2 Tolerance on Linear Densities and Mass Per Coil

Following tolerances shall be applicable on the values specified for linear densities and mass per coil in Table 2:

Reference Number	Tolerances
Up to 8	± 10 percent
10 to 14	± 8 percent
Above 14	± 5 percent

### 6.3 Length of Coil

The length of each coil when tested as per IS 7071 (Part II) : 1974 shall not be less than 220 m or as declared. However, if so agreed between the buyer and seller the length may be measured at zero tension and the following tolerances shall be applicable on the declared length:

Reference Number	Tolerance
Up to 14	± 5 percent
Above 14	± 3 percent

NOTE -- Any coil which has been shortened by cutting from it the necessary test sample shall be accepted at its original length and mass as part of the delivery provided that the test sample complies with the specified requirements.

## 7 PACKING

**7.1** All ropes shall be neatly coiled and suitably packed to prevent damage during transit.

NOTE — IS 3256 : 1980 may be followed for ropes intended for home use.

## 8 MARKING

**8.1** Each coil shall have securely attached labels at both ends carrying the following information:

- Name of the material,
- Reference No. and grade of the rope,
- Length (m) of the rope,
- Manufacturer's name or trade-mark, and
- Any other information required by the buyer.

## 9 SAMPLING

### 9.1 Lot

A quantity of coils of rope of the same linear density, and dimensions manufactured under similar conditions and delivered to a buyer against a despatch note shall constitute a lot.

### 9.2 Sample Size

Sampling shall be as representative as possible of the lot subjected to measurements and tests. Draw the samples at random, at the rate shown by the following formula:

$$S = 0.4 \sqrt{N}$$

where  $S$  is the number of lengths of rope and  $N$  is the size of the lot expressed as the number of 220 m coils. When  $S$  as calculated is not a whole number, round off the value obtained to give a whole number in accordance with the requirements of IS 2 : 1960. In cases where  $S$  is less than 1, draw one sample length.

## 10 CRITERIA FOR CONFORMITY

**10.1** The lot shall be declared conforming to this standard if the conditions given below are satisfied:

- The length of each coil shall satisfy the specified requirement,
- All the individual samples tested for breaking force shall satisfy the specified requirements. However, in case of failure of a test specimen from a coil another specimen shall be retested from the same coil and the same shall satisfy the specified breaking force, and
- The average values of the test results of the lot in respect of other characteristic conform to the requirements specified in the standard.

**Table 2 Requirements for Polyamide Double Braided Rope**  
( Clause 6.1 )

Reference Number (Nominal Dia)	Linear Density	Nominal Mass per Coil ( 220 m Length )	Breaking Strength, <i>Min</i>
mm	g/m	kg	daN
6	24	5.28	930
8	40	8.80	1 420
10	71	15.62	2 670
12	95	20.90	3 120
14	119	26.18	4 240
16	159	34.98	5 390
18	214	47.08	6 860
21	285	67.70	9 320
24	357	78.54	12 450
28	486	106.92	17 650
32	635	139.70	21 570
36	804	176.88	26 480
40	988	217.36	35 300
44	1 200	264.00	41 190
48	1 430	314.60	49 030
52	1 680	369.60	58 840
56	1 950	429.00	67 660
60	2 230	490.60	76 490
64	2 540	558.80	88 300
72	3 210	706.20	107 000
80	3 970	873.40	135 500
88	4 810	1 058.20	164 000
96	5 720	1 258.40	191 000
104	6 710	1 476.20	227 500
112	7 790	1 713.80	262 000
120	8 930	1 964.60	299 000
128	10 200	2 244.00	333 500
144	12 800	2 816.00	412 000
Tolerance Percent	$\pm 5$ ( see 6.2.1 )	$\pm 5$ ( see 6.2.1 )	—
Method of Tess	IS 7071 ( Part II ) : 1974	IS 7071 ( Part II ) : 1974	IS 7071 ( Part IV ) : 1986

## NOTES

- 1 Diameter is given only for reference purpose.
- 2 In case the declared length of coil is other than 220 m, the nominal mass per coil for a rope of particular diameter shall be the product of the linear density and the declared length.



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Doc : No. TDC 14 (2412)

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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